

REMARKS

Reconsideration of the objections to the specification is respectfully requested in light of the above amendments, wherein the specification has been revised to comply with 37 CFR 1.77(b). No new matter is contained in the amendments.

Reconsideration is respectfully requested of the rejection of claims 1-6 under 35 USC §101 for lacking utility and under 35 USC §112.

Claims 1-6 have been deleted and claims 7-14 added to overcome rejections based on 35 U.S.C. §101 and §112, first paragraph. Currently, claims 7-11 are before the Examiner for consideration of their merits.

New claims 7-10 recites a kit for constructing a model of the structure and property of subatomic particles. Claims 11-14 recite Applicant's novel approach to constructing models of subatomic particles. The subject matter of these newly added claims finds support in the original disclosure.

The invention is a new and intrinsic method and device of replicating, visualizing, animating, producing and exploring observed elementary particle spectroscopic transitions, states, modes, properties and processes. Essentially, this invention is a construction kit that allows physicists and others skilled in the art of subatomic research to make models of subatomic particles. These particles include Bosons, Leptons, Mesons, and Baryons, along with various states of each of these types of particles.

This construction kit is not limited to any particular physical medium. It can be used in a computer-animated, holographic, or other visual medium. In a

physical medium, one skilled in the art would use long, thin rods made out of any common material, such as plastic or metal, to construct the various internal particle structures and states disclosed. In a computer-animated medium, one skilled in the art could create a program in accordance with applicant's disclosure to generate computer images of subatomic structures.

Importantly, the models are built from the inside out. Therefore, unlike the device in U.S. Patent No. 4,452,590 ("the '590' patent") which enables one skilled in the art to create models of subatomic particles by filling a cavity with a balloon-like vesicle filled with a given volume of fluid, the present invention forms particles by constructing the particle structure from within according to the specification and drawings. These drawings supply one skilled in the art with all the variables necessary to construct models of these fundamental particles, including insertion points, angles, length, etc. In short, the specification is a blueprint to construct cheap and easy subatomic particle models as depicted in Figures 1-32.

The specification discloses thirty-two (32) different states of matter, each with a corresponding figure in the drawings section.

In view of the above, it is respectfully submitted that the specification clearly states that the utility of the claimed invention is to allow someone, e.g., a scientist to visualize a particle constructed in accordance with the prevailing scientific concepts. Applicant makes multiple assertions of utility throughout the specification. On page 4, the differences between the present invention and Applicant's own prior '590 patent are analyzed. The '590 patent claims a device

for producing a model of Baryon states. It uses a balloon-like vesicle filled with a given volume of fluid to fill a cavity which represents the structure of a Baryon state. Applicant shows that the present invention is more useful than the device claimed in the '590 patent because it discloses devices and methods that not only create models of Baryon states, but also Boson, Lepton and Meson states. Further, the present invention, unlike the device in the '590 patent, "appears from and on the surface of the particles." This new property of the claimed invention enables the models to be linearly independent, as opposed to the device in the '590 patent which is centered.

Additionally, on page 5 of the specification, Applicant states that "the invention is...about...a new and intrinsic method and device of replicating, visualizing, animating, producing and exploring observed elementary particle spectroscopical transitions, states, modes, properties and processes." One skilled in the art of subatomic research would likely find such a device and method to be useful in his or her research. To support this educational utility, U.S. Patent Class 434, "Education and Demonstration," enumerates as patentable a "crystal structure model or display having discrete elements" (277), "molecular model or display having discrete elements" (278), and a host of other educational inventions.

Furthermore, utility is established by readily available materials. In the field of proteomics, for instance, scientists rely on modeling techniques to study proteins. The present invention proposes a novel device and method of using the device to make models of subatomic particles. These models constitute a

cheap and effective tool for scientists to study and visualize subatomic particles.

For the Examiner's benefit, the following articles are included with this amendment as evidence of the utility of atomic modeling: SCIENCE, Vol. 307, March 11, 2005, p. 1554-55, 1557 (utility of modeling in protein research); SCIENCE, Vol. 308, April 1, 2005, p. 35, 39-40 (U.S. research needs to shift towards cheaper alternatives).

Despite the Examiner's allegation that "the specification and the claims consist of a disorganized conglomeration of facts relating to elementary particles, states, charges, binding materials, etc;...", the newly amended specification actually is much more organized than it appears. Pages 1-6 describe the background of the prior art and summarize the invention, while pages 7-29 explain how to achieve the models depicted in FIGS. 1-32. The specification has bold-faced headings for the four types of particles: Bosons, Leptons, Mesons and Baryons. An umbrella paragraph describing general properties of the group follows each bolded heading, and then specific instructions explaining how to build models follow the umbrella paragraph.

Although the specification admittedly uses highly specific and technical language throughout the application, it is respectfully contended that the nature of the art requires this type of sophisticated language and that one of skill in the art would immediately understand the usefulness of Applicant's disclosure.

It is submitted that this application is in condition for allowance, and an early indication thereof is respectfully requested. The Examiner is invited to contact the undersigned with any outstanding issues.

All necessary extensions of time are requested. Enclosed is a check in the amount of \$510 for a three month extension. Please charge any deficiency and credit any excess to deposit account 50-1088.

Respectfully submitted,
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